

FAIRCHILD

A Schlumberger Company

BAY72/BAY80

General Purpose High
Conductance Diodes

- V_F ... 1.0V (MAX) @ 100 mA (BAY72)
- V_F ... 1.0V (MAX) @ 150 mA (BAY80)

PACKAGES

BAY72 DO-35
BAY80 DO-35

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

Storage Temperature Range
Maximum Junction Operating Temperature
Lead Temperature

-65°C to +200°C
+175°C
+260°C

Power Dissipation (Note 2)

Maximum Total Power Dissipation at 25°C Ambient
Linear Power Derating Factor (from 25°C)

500 mW
3.33 mW/°C

Maximum Voltage and Currents

WIV	Working Inverse Voltage	BAY 72	100 V
		BAY 80	120 V
I_O	Average Rectified Current		200 mA
I_F	Continuous Forward Current		500 mA
I_F	Peak Repetitive Forward Current		600 mA
I_F (surge)	Peak Forward Surge Current		
	Pulse Width = 1 s		1.0 A
	Pulse Width = 1 μ s		4.0 A

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	BAY 72		BAY 80		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
V_F	Forward Voltage	0.78	1.00		1.00	V	$I_F = 150$ mA
		0.73	0.92			V	$I_F = 100$ mA
		0.63	0.78			V	$I_F = 50$ mA
						V	$I_F = 10$ mA
		0.51	0.64			V	$I_F = 1.0$ mA
I_R	Reverse Current				100	nA	$V_R = 120$ V
			100		150	μ A	$V_R = 120$ V, $T_A = 100^\circ\text{C}$
			100			nA	$V_R = 100$ V
						μ A	$V_R = 100$ V, $T_A = 125^\circ\text{C}$
BV	Breakdown Voltage	125		150		V	$I_R = 100$ μ A
C	Capacitance		5.0		6.0	pF	$V_R = 0$, $f = 1$ MHz
t_{rr}	Rev. Rec. Time (note 3)		50		60	ns	$I_F = I_R = 30$ mA, $R_L = 75$ Ω $I_F = 30$ mA, $V_R = 35$ V
	(note 4)		400			ns	
V_{fr}	Fwd. Rec. Voltage (note 5)		2.5			v	$R_L = 2.0$ K Ω , $C_L = 10$ pF
V_{fr}	Fwd. Rec. Voltage (note 5)		2.5			V	$I_F = 100$ mA (pulsed)
t_{fr}	Fwd. Rec. Time (note 5)		50			ns	$I_F = 100$ mA (pulsed)
Q_8	Stored Charge (note 6)		250			pC	$I_F = 20$ mA, $I_R = 1.0$ mA
RE	Rect. Efficiency (note 7)	35				%	$f = 100$ MHz

NOTES:

- These ratings are limiting values above which the serviceability of the diode may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Recovery to 1.0 mA.
- Recovery to 400 k Ω , Jan 256 Circuit.
- The oscilloscope used as the response detector shall have a bandwidth of at least 10 MHz (3 dB down), and shall be calibrated using a deposited carbon resistor of 50 Ω in the diode test clips. t_{fr} is defined as the difference between the 10% point of the pulse and the point where V_F is to be within 10% of the quiescent value. Pulse conditions shall be 0.1 μ s wide at base, 20 ns maximum rise time, repetition rate = 100 kHz max.
- Measured on the Tektronix "S" unit.
- Rectification efficiency is defined as the ratio of dc load voltage to peak rf input to the circuit. Load resistance of 5.0 k Ω , load capacitance 20 pF.
- For product family characteristic curves, refer to Chapter 4, D1.